

6FW5

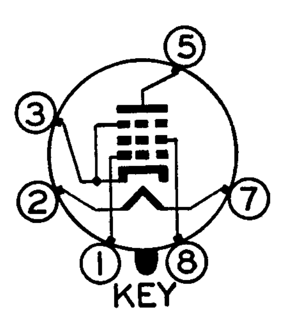
BEAM PENTODE

FOR TV HORIZONTAL-DEFLECTION AMPLIFIER APPLICATIONS

DESCRIPTION AND RATING

The 6FW5 is a beam-power pentode primarily designed for use as the horizontal-deflection amplifier in television receivers.

BASING DIAGRAM

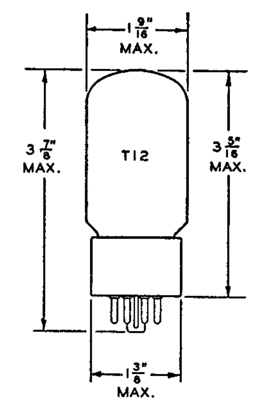


EIA 6CK

TERMINAL CONNECTIONS

Pin 1—Grid Number 1
Pin 2—Heater
Pin 3—Cathode and Beam Plates
Pin 5—Plate
Pin 7—Heater
Pin 8—Grid Number 2 (Screen)

PHYSICAL DIMENSIONS



EIA 12-14

GENERAL

ELECTRICAL

Cathode—Coated Unipotential

Heater Voltage, AC or DC	6.3±10%	Volts
Heater Current	1.2	Amperes
Direct Interelectrode Capacitances, approximate†		
Grid-Number 1 to Plate: (g1 to p)	0.5	μμf
Input: g1 to (h+k+g2+b.p.)	17	μμf
Output: p to (h+k+g2+b.p.)	7.0	μμf

MECHANICAL

Mounting Position—Any

Envelope—T-12, Glass

Base—B6-112, Short Medium-Shell Octal 6-Pin



MAXIMUM RATINGS

HORIZONTAL-DEFLECTION AMPLIFIER SERVICE—DESIGN-MAXIMUM VALUES‡

Rating	Value	Unit
DC Plate-Supply Voltage (Boost+DC Power Supply)	770	Volts
Peak Positive-Pulse Plate Voltage	6500	Volts
Peak Negative-Pulse Plate Voltage	1500	Volts
Screen Voltage	220	Volts
Negative DC Grid-Number 1 Voltage	55	Volts
Peak Negative Grid-Number 1 Voltage	330	Volts
Plate Dissipation§	17.5	Watts
Screen Dissipation	3.5	Watts
DC Cathode Current	175	Milliamperes
Peak Cathode Current	550	Milliamperes
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	200	Volts
Grid-Number 1 Circuit Resistance	1.0	Megohms
Bulb Temperature at Hottest Point	220	C

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey tube of a specified type as defined by its published data, and should not be exceeded under the worst probable conditions.

These values are chosen by the tube manufacturer to provide acceptable serviceability of the tube, taking responsibility for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, variation in characteristics of all other tubes in the equipment, equipment control adjustment, load variation, signal variation, and environmental conditions.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

Characteristic			Unit
Plate Voltage	60	250	Volts
Screen Voltage	150	150	Volts
Grid-Number 1 Voltage	0¶	−22.5	Volts
Plate Resistance, approximate	—	20000	Ohms
Transconductance	—	6600	Micromhos
Plate Current	345	75	Milliamperes
Screen Current	30	2.4	Milliamperes
Grid-Number 1 Voltage, approximate			
Ib = 1.0 Milliampere	—	−46	Volts
Triode Amplification Factor #	—	4.1	

† Without external shield.

‡ For operation in a 525-line, 30-frame television system as described in "Standards of Good Engineering Practice Concerning Television Broadcast Stations," Federal Communications Commission. The duty cycle of the voltage pulse must not exceed 15 percent of one scanning cycle.

§ In stages operating with grid-leak bias, an adequate cathode-bias resistor or other suitable means is required to protect the tube in the absence of excitation.

¶ Applied for short interval (two seconds maximum) so as not to damage tube.

Triode connection (screen tied to plate) with Eb = Ec2 = 150 volts and Ec1 = −22.5 volts.

AVERAGE PLATE CHARACTERISTICS

E_f = RATED VALUE
E_{c2} = 150 VOLTS

I_b @ E_{c1} = 0 VOLTS
-5.0
-10
-15
-20
-22.5
-25
-30
-40

I_{c2} @ E_{c1} = 0 VOLTS
-5.0
-10
-20
-30

PLATE CURRENT (I_b) IN MILLIAMPERES
SCREEN CURRENT (I_{c2}) IN MILLIAMPERES
PLATE VOLTAGE IN VOLTS

K-55611-TD79-1A
FEBRUARY 5, 1960

AVERAGE PLATE CHARACTERISTICS

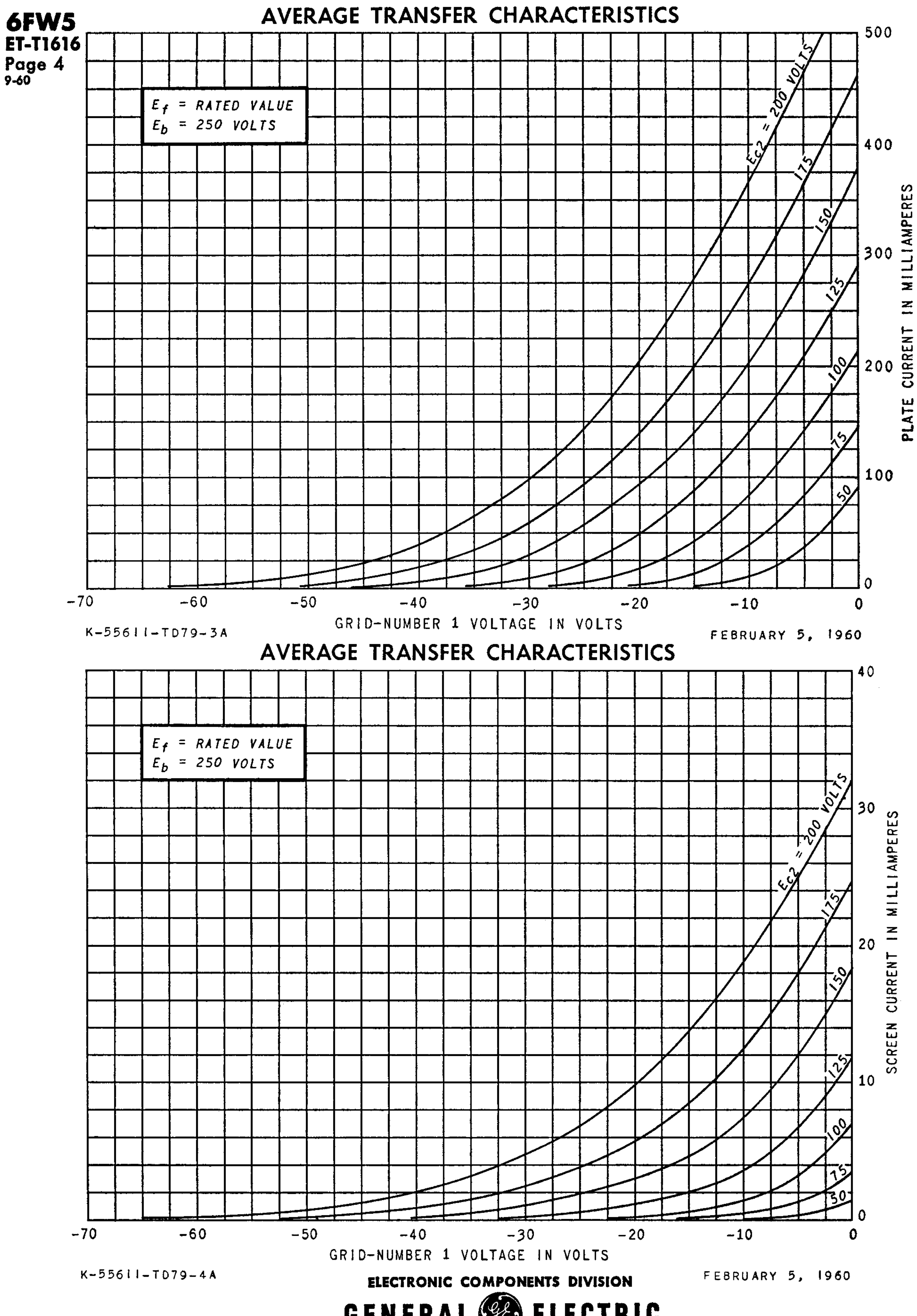
E_f = RATED VALUE
E_{c1} = 0 VOLTS

I_b @ E_{c2} = 200 VOLTS
175
150
125
100
75
50

I_{c2} @ E_{c2} = 200 VOLTS
175
150
125
100
75
50

PLATE CURRENT (I_b) IN MILLIAMPERES
SCREEN CURRENT (I_{c2}) IN MILLIAMPERES
PLATE VOLTAGE IN VOLTS

K-55611-TD79-2A
FEBRUARY 5, 1960


AVERAGE TRANSFER CHARACTERISTICS
E_f = RATED VALUE
E_b = 250 VOLTS
Ec2 = 200 VOLTS
175
150
125
100
75
50
PLATE CURRENT IN MILLIAMPERES
0
100
200
300
400
500
-70
-60
-50
-40
-30
-20
-10
0
GRID-NUMBER 1 VOLTAGE IN VOLTS
K-55611-TD79-3A
FEBRUARY 5, 1960
AVERAGE TRANSFER CHARACTERISTICS
E_f = RATED VALUE
E_b = 250 VOLTS
Ec2 = 200 VOLTS
175
150
125
100
75
50
SCREEN CURRENT IN MILLIAMPERES
0
10
20
30
40
-70
-60
-50
-40
-30
-20
-10
0
GRID-NUMBER 1 VOLTAGE IN VOLTS
K-55611-TD79-4A
FEBRUARY 5, 1960